

ABSTRACT

AIM:

To study possible correlations between myopia and optic nerve head parameters and retinal nerve fiber layer thickness values as measured by spectral domain optical coherence tomography (SD-OCT) in young Indian eyes.

MATERIALS AND METHODS:

This was a cross-sectional case-control study , conducted between August 2012 and June 2014 at Joseph Eye Hospital , Trichy . A total of 108 younger adult eyes were studied, of which 40 eyes constituted the control(emmetrope) group, 27 eyes constituted the mild myopia group less than or equal to 3D and 41 eyes constituted the moderate to severe myopia group more than 3D. The groups were essentially age-matched . The parameters measured in all eyes included best corrected visual acuity (BCVA), intraocular pressure(IOP)(by non contact tonometry), keratometry (K) values, central corneal thickness(CCT), axial length (by the IOL master™) and optic disc parameters by the Cirrus™ HD-optical coherence tomographer. .

RESULTS:

No significant differences between the groups were noted with regard to age, gender, CCT, IOP or K readings. A significant increase in the axial length consistent with an increase in degree of myopia was noted. Similarly, the disc area and cup volume decreased as the degree of myopia increased. Mean average retinal nerve fiber layer thickness (RNFLT)

values as well as mean values of superior, inferior and nasal RNFLT were significantly lower in myopic eyes when compared to emmetropic eyes. There was a significant correlation between axial length and inferior, superior and average RNFLT values. Temporal thickening of RNFL was noted in myopic eyes when compared to emmetropic eyes, although this was not statistically significant. There was no correlation between spherical equivalent and RNFLT.

CONCLUSION:

OCT, a non-contact, non-invasive imaging modality that is used to take high-resolution, in vivo, cross-sectional pictures of the optic nerve head (ONH), helps to quantify the structural damage. Myopic patients visit periodically for their refractive error correction. Myopic discs may mimic glaucomatous cupping changes or any other optic neuropathy conditions. Since myopic patients are at risk of developing glaucoma and diagnosis of glaucoma in myopic patients is difficult due to its anatomical variation; ONH, Humphrey Field Analyser and OCT parameters need to be interpreted cautiously. Axial length may influence the RNFLT distribution and disc area, thus the Cirrus™ OCT may falsely label high myopes as having thinner RNFL values in the superior and inferior quadrants due to axial length-induced magnification factor or due to redistribution of superior and inferior RNFL to the temporal aspect because of stretching of the eyeball. OCT parameters in myopic patients need to be interpreted with caution taking into account their refractive error, axial length and it should be correlated clinically before formulating a diagnosis such as glaucoma or other optic neuropathy conditions causing RNFL thinning.